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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER DHINGRA, RAKESH KUMAR	
			ART UNIT 1763	PAPER NUMBER
DATE MAILED: 02/28/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/803,994

Applicant(s)

NISHIMOTO ET AL.

Examiner

Rakesh K. Dhingra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 41-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 07/05, 02/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 02/02/06 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because documents listed as DO, DP, DQ (page 4 of IDS) are supplied in the form of drawings only without any accompanying description and thus do not given any relevant information. Accordingly these three documents were not considered. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP§ 609.05(a).

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Figure 3A – reference number 80 is not shown in drawing (as mentioned in Paragraph 0039 of the specification).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted

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after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1) Claims 50-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Line 2 of claim 50 recites "III-column element and a Lanthanone" but does not indicate if the column as implied is "IIIa-column" or "IIIb- column". It is presumed that the column implied is "IIIb-column" since Yttrium and Lanthanone (Lanthanides) are included under column IIIb-column (that includes elements like Sc, Y) of periodic table. Further, Lanthanone (Lanthanide) is a part of IIIb- Column and thus reciting it separately in the claim appears to be redundant. For the purpose of examination on merits this limitation has therefore been interpreted as "IIIb-column element".

Further, claims 51, 52 are rejected as being dependent upon claim 50. For the purpose of examination on merits claim 52 has been interpreted as "The insert as recited in claim 50, wherein the element comprises at least one of Yttrium, Dysprosium, and Europium".

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2) Claim 54 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Line 2 of claim 54 recites limitation "a minimum thickness – said exposed surfaces" where "minimum limitation" is a relative term and renders the claim indefinite. The term "minimum thickness" is not defined by the claim and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Paragraph 0047 of the specification reads " For example, the minimum thickness can range from 0.5 micron to 500 micron" implying that minimum thickness can be any number (even less than 0.5 micron or more than 500 micron). For the purpose of examination on merits this limitation has been interpreted as "a thickness that is constant across at least one of said exposed surfaces".

3) Claim 56 recites the limitation "said interior fastener surface" in line 1. There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination on merits this limitation has been interpreted as "interior of fastener receptor surface".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 41-46, 48, 54, 56 are rejected under 35 U.S.C. 102(b) as being unpatentable over Saito et al (WO 00/13219 - which is equivalent to US Patent No. 6,562,186) in view of Shih et al (US Patent No. 6,120,640).

Regarding Claims 41, 44: Saito et al teach an apparatus (Figures 1-3) that includes an insert for a deposition shield 11 in a plasma processing system 100 comprising:
a (plug) second member) 22 configured to fit into an opening 30 in said deposition shield, said plug comprises a frontal surface and a perimeter surface,
a flange 22b coupled to said plug and configured to couple said insert to the deposition shield 11, said flange comprising a first surface (face towards the plug portion), a second surface (face towards chamber wall 1), and an edge surface (the face mating with inside cavity of shield 11, wherein a portion of said first surface comprises a mating surface (face of flange where it joins with deposition shield 11); and an anodized coating (protective barrier) on plug member (with flange 22b) 22 coupled to a plurality of exposed surfaces of said insert, wherein the plurality of exposed surfaces comprise said

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frontal surface of said plug, said perimeter surface of said plug, and said first surface of said flange including mating surface (Column 5, line 5 to Column 6, line 25).

Saito et al do not specifically indicate that protective coating is not done on the mating surface of flange 22b (with deposition shield 11).

Shih et al teach an apparatus (Figures 1, 5) that includes plasma reactor parts coated with protective coating of boron carbide. Shih et al teach that anodization (protective coating) from selected chamber surfaces of upper housing 14 is removed to provide electrical contact between mating parts (Column 8, lines 1-7).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to exclude anodization (protective coating) from selected (mating) surfaces as taught by Shih et al in the apparatus of Saito et al to provide proper electrical contact (for example for grounding) since the plug (including flange) 22 is in intimate contact with chamber wall 1b which is normally grounded (Figures 1, 6, 8). Furthermore it would be obvious to protect only the surface (of plug) directly exposed to processing plasma.

Regarding Claims 42: Saito et al teach that second member (plug) 22 comprises a plurality of holes for fasteners (fastening receptors) coupled to said first surface of said flange 22b and said second surface of said flange and configured to receive fastening devices 33 in order to couple said second member 22 to deposition shield 11 (Column 6, lines 5-15).

Regarding Claim 43: Saito et al teach (Figures 2, 3) that flange 22b comprises holes (fastener receptors).

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Saito et al in view of Shih et al do not teach specific details of the shape of fastener receptor.

It is conventional for the fastener holes to comprise of an entrant region, an entrant cavity, an exit through-hole, an interior fastener surface, and a recessed fastener surface as per shape/profile of the fastener used (Column 6, lines 5-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use fastener receptor shape/profile as per shape/profile of the fastener in the apparatus of Saito et al in view of Shih et al to provide proper securing of plug with deposition shield.

In this regard courts have ruled (Case law):

“The motivation to make a specific structure is always related to the properties or uses one skilled in the art would expect the structure to have. *In re Newell* 13 USPQ 2d 1248, 1250 (Fed. Cir. 1989); *Fromson v. Advance Offset Plate* 225 USPQ 26, 31 (Fed. Cir. 1985); *In re Gyurik* 201 USPQ 552, 557 (CCPA 1979).”

Regarding Claims 45,46,48: Saito et al teach that the apparatus comprises of second member 22 that is made of aluminum (metal) and is anodized (aluminum oxide protective layer) [Column 5, lines 55-65].

Regarding Claim 56: Saito et al teach that second member (plug and flange) 22 is made from aluminum (exposed surface) and is anodized (protective coating).

Saito et al in view of Shih et al do not teach that exposed surface comprises interior fastener receptor surface.

It would be obvious to exclude interior fastener receptor surface from being coated since the same is not directly exposed to plasma and to provide proper electrical contact as explained above under claim 41.

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Therefore it would have been obvious to exclude protective coating from interior fastener receptor surface in the apparatus of Saito et al to avoid coating on unexposed surfaces of the flange and to provide proper electrical contact.

Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (WO 00/13219 - which is equivalent to US Patent No. 6,562,186) in view of Shih et al (US Patent No. 6,120,640) as applied to Claim 41 and further in view of Esquibel (US Patent No. 5,885,402).

Regarding Claim 47: Saito et al in view of Shih et al teach all limitations of the claim except that insert comprises rectangular shape.

Esquibel teach an apparatus (Figures 3A, 3B, 4) that includes window clamp (insert) 60 with rectangular shape having window 54 and bolts 64 that cooperate with bolt holes 65 (Column 7, lines 5-50).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use rectangular insert as taught by Esquibel in the apparatus of Saito et al in view of Shih et al to enable provide plural diagnostic ports for monitoring plasma conditions.

Claims 49-51, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (WO 00/13219 - which is equivalent to US Patent No. 6,562,186) in view of Shih et al (US Patent No. 6,120,640) as applied to Claim 41 and further in view of Harada et al (EP Pub. No. 1 156 130).

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Regarding Claims 49-51,53: Saito et al in view of Shih et al teach all limitations of the claim except that protective barrier comprises a mixture of Al₂O₃ and Y₂O₃ or compound containing Yttrium or IIb-column elements.

Harada et al teach an apparatus that includes internal members of plasma processing vessel are coated with aluminum oxide and yttrium oxide (includes IIb-column element Y) as protection against chemical corrosion and plasma erosion (Abstract).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use Al₂O₃ and Y₂O₃ (IIb-column element) coatings as protective barrier as taught by Harada et al in the apparatus of Saito et al in view of Shih et al to provide protection against chemical corrosion and plasma erosion (Abstract).

Claims 50-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (WO 00/13219 - which is equivalent to US Patent No. 6,562,186) in view of Shih et al (US Patent No. 6,120, 640) as applied to Claim 41 and further in view of Yumiko et al (JP Pub. No. 10-004083).

Regarding Claims 50-53: Saito et al in view of Shih et al teach all limitations of the claim except that protective barrier comprises compounds containing III-column elements and Lanthanum. (Claims 50, 51 recite "III-column" but do not indicate if the column as implied is "IIa-column" or "IIb- column". It is presumed that in claims 50, 51 the column implied is "IIb-column" since Yttrium and Lanthanum (Lanthanides) are included under column IIb-column (that includes elements like Sc, Y) of periodic table.

Yumiko et al teach an apparatus that includes plasma exposed internal parts coated with protective barrier of compounds comprising IIb – column elements like La

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(Lanthanum), Cerium, Dy (Dysprosium) and Eu (Europium) or Y (Yttrium oxide)

{Abstract and Paragraphs 0009-013}.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use protective barrier coatings comprising IIIb – column elements like La (Lanthanum), Cerium, Dy (Dysprosium) and Eu (Europium), Y (Yttrium) as taught by Harada et al in the apparatus of Saito et al in view of Shih et al to provide high corrosion resistance (Abstract).

Claim 54 is rejected under 35 U.S.C. 102(b) as being unpatentable over Saito et al (WO 00/13219 - which is equivalent to US Patent No. 6,562,186) in view of Shih et al (US Patent No. 6,120,640) as applied to claim 41 and further in view of Ruckel et al (US Patent No. 5,521,790).

Regarding Claim 54: Saito et al in view of Shih et al teach that second member (plug) 22 is anodized.

Saito et al do not teach protective coating of minimum thickness that is constant.

Ruckel teach an apparatus (Figure 2) that includes an electrostatic chuck 1 whose front surface is anodized to precise (constant) thickness to ensure uniformity of dielectric breakdown of the insulating layer (Column 1, line 50 to Column 2, line 68).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to form anodized film with constant thickness as taught by Ruckel et al in the apparatus of Saito et al in view of Shih et al ensure uniformity of dielectric breakdown of the insulating layer of the insulating layer (Column 1, line 50 to Column 2, line 10).

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Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (WO 00/13219 - which is equivalent to US Patent No. 6,562,186) in view of Shih et al (US Patent No. 6,120,640) as applied to Claim 41 and further in view of Harada et al [US PG PUB No. 2002/0177001] or Robertson et al (US Patent No. 5,366,585)].

Regarding Claim 55: Saito et al in view of Shih et al teach all limitations of the claim except protective barrier coating thickness being variable.

Harada et al teach an apparatus that includes plasma exposed internal parts coated with protective barrier for resistance to chemical corrosion and plasma erosion.

Harada et al further teach that thickness of such coatings could vary from 50-2000 microns. Harada et al also teach that coating thickness is dependent upon degree of corrosion in plasma environment, whether coating is applied as undercoat or top coat, and also to enable proper adhesion {Paragraphs 0013, 0014, 0027, 0028, 0038}.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use protective barrier coatings as per related process parameters and within 0.5 to 500 microns as taught by Harada et al in the apparatus of Saito et al in view of Shih et al to provide excellent resistance to chemical corrosion and plasma erosion (Abstract).

Saito et al in view of Shih et al and Harada et al do not explicitly teach that protective coating can have variable thickness.

Shrotriya teaches an apparatus for cleaning a plasma chamber (Figure 1A) where the thickness of cleaning residues in the chamber varies in different areas in the chamber implying thus would need different cleaning times implying that the protective coating

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(anodization) on various parts may require varying thickness depending upon location of the surface with reference to plasma (Column 2, line 65 to Column 3, line 15).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use variable thickness of protective coating as taught by Shrotriya in the apparatus of Saito et al in view of Shih et al and Harada et al to provide protection due to varying thickness of chamber residues.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 41, 46, 48-53 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 6-13, 21, 26-33 of copending Application No. 10/811,912 (Fink et al) in view of Saito et al (WO 00/13219 - which is equivalent to US Patent No. 6,562,186.

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1) Claims 1, 7 of copending application teach an apparatus that includes an optical window deposition shield (insert) for a deposition shield in a plasma processing system comprising:

a honeycomb structure (plug) configured to fit into an opening in chamber liner (deposition shield);

a backing plate coupled to said plug and configured to couple said insert to the chamber liner (deposition shield).

an anodized coating (protective barrier) on a plurality of exposed surfaces of said honeycomb structure (plug –part of insert).

Claims 1, 7 do not teach a plug that comprises a frontal surface and a perimeter surface and a **flange** that comprises a first surface, a second surface, and an edge surface, wherein a portion of said first surface comprises a mating surface, and an anodized coating (protective barrier) on exposed surfaces of insert.

Saito et al teach an apparatus (Figures 1-3) that includes an insert for a deposition shield 11 in a plasma processing system 100 comprising:

a (plug) second member) 22 configured to fit into an opening 30 in said deposition shield, said plug comprises a frontal surface and a perimeter surface,

a **flange** 22b coupled to said plug and configured to couple said insert to the deposition shield 11, said flange comprising a first surface (face towards the plug portion), a second surface (face towards chamber wall 1), and an edge surface (the face mating with inside cavity of shield 11, wherein a portion of said first surface comprises a mating surface (face of flange where it joins with deposition shield 11); and an anodized coating

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(protective barrier) on plug member (with flange 22b) 22 coupled to a plurality of exposed surfaces of said insert, wherein the plurality of exposed surfaces comprise said frontal surface of said plug, said perimeter surface of said plug, and said first surface of said flange including mating surface (Column 5, line 5 to Column 6, line 25). Saito et al do not explicitly indicate that exposed surfaces (with protective coating) excludes mating surface of flange 22b (with deposition shield 11) but it would be obvious to exclude protective coating on mating portion of flange since it is not directly exposed to plasma. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use plug and flange configuration as taught by Saito et al in the apparatus as per Claims 1, 7 so that insert is scarcely etched by plasma products and plasma can be precisely detected.

2) Claims 46, 48-53: Claims 6, 8-13 and 26, 28-33 of the patent teach that insert (honeycomb structure) is made of aluminum and coated with protective barrier comprising of Al_2O_3 / $\text{Al}_2\text{O}_3 + \text{Y}_2\text{O}_3$ / compound from IIIa-Column elements (La, Y, Sc, Ce, Dy, Eu) and barrier coating comprises of at least one of Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , Dy_2O_3 .

This is a provisional obviousness-type double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rakesh Dhingra



Parviz Hassanzadeh
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